

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Patent Application of

David E. Aspnes et al.

Application No.: NEW

Filed: HEREWITH

For: BROADBAND SPECTROSCOPIC
ROTATING COMPENSATOR
ELLIPSOMETER

Group Art Unit: Unknown

Examiner: Unknown

**INFORMATION DISCLOSURE
STATEMENT**121 Spear Street, Suite 290
San Francisco, CA 94105
(415) 512-1312Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Sir:

Applicant(s) submit(s) herewith patents, publications or other information [attached hereto and listed on the attached Form PTO-1449 (modified)] of which they are aware, which they believe(s) may be material to the examination of this application and in respect of which there may be a duty to disclose in accordance with 37 CFR § 1.56.

This Information Disclosure Statement:

- (a) ☒ accompanies the new patent application submitted herewith. 37 CFR § 1.97(a).
- (b) ☐ is filed within three months after the filing date of the application or within three months after the date of entry of the national stage of a PCT application as set forth in 37 CFR § 1.491.
- (c) ☐ as far as is known to the undersigned, is filed before the mailing date of a first Office Action on the merits, or before a first office action after filing a Request for Continued Examination under §1.114.
- (d) ☐ is filed after the first office action and more than three months after the application's filing date or PCT national stage date of entry filing but, as far as is known to the undersigned, prior to the mailing date of either a final rejection or a notice of allowance, whichever occurs first, and is accompanied by either the fee

Atty Docket No.: TWI-5440

(\$180) set forth in 37 CFR § 1.17(p) or a certification as specified in 37 CFR § 1.97(e), as checked below.

- (e) ☐ is filed after the mailing date of either a final rejection or a notice of allowance, whichever occurred first, and the Issue Fee has not been paid, and is accompanied by the fee (\$130) set forth in 37 CFR § 1.17(i)(1) and a certification as specified in 37 CFR § 1.97(e), as checked below. This document is to be considered as a petition requesting consideration of the information disclosure statement.

[If either of boxes (d) or (e) is checked above, the following "certification" under 37 CFR § 1.97(e) may need to be completed.] The undersigned certifies that:

- (f) ☐ Each item of information contained in the information disclosure statement was cited in a communication mailed from a foreign patent office in a counterpart foreign application not more than three months prior to the filing of this information disclosure statement.
- (g) ☐ No item of information contained in this information disclosure statement was cited in a communication mailed from a foreign patent office in a counterpart foreign application or, to the knowledge of the undersigned after making reasonable inquiry, was known to any individual designated in 37 CFR § 1.56(c) more than three months prior to the filing of this information disclosure statement.

A list of the patent(s) or publication(s) is set forth on the attached Form PTO-1449 (Modified).

A copy of the items on PTO-1449 (Modified) is supplied herewith, except as noted below.

Those patent(s) or publication(s) which are marked with an asterisk (*) in the attached form PTO-1449 (Modified) are not supplied because they are (a) either U.S. Patents and this an application filed after June 30, 2003, or (b) were previously cited by or submitted to the Office in a prior application no. 10/206,428, filed July 26, 2002; application no. 09/944,831, filed August 31, 2001; application no. 09/619,456, filed July 19, 2000; application no. 09/345,560, filed June 30, 1999; 09/076,673, application no. filed May 12, 1998; and application no. 08/685,606, filed July 24, 1996, and relied upon in this application for an earlier filing date under 35 U.S.C. § 120.

A concise explanation of relevance of the items listed on form PTO-1449 (Modified) is:

- (k) ☒ not given
- (l) ☐ given for each listed item
- (m) ☐ given for only non-English language listed item(s) [Required]
- (n) ☐ is in the form of an English language copy of a Search Report from a foreign patent office, issued in a counterpart application, which refers to the relevant portions of the references [copy attached].

The Examiner is reminded that a "concise explanation of the relevance" of the submitted items "may be nothing more than identification of the particular figure or paragraph of the patent or publication which has some relation to the claimed invention," MPEP § 609.


While the information and references disclosed in this Information Disclosure Statement may be "material" pursuant to 37 CFR § 1.56, it is not intended to constitute an admission that any patent, publication or other information referred to therein is "prior art" for this invention unless specifically designated as such.

In accordance with 37 CFR § 1.97(g), the filing of this Information Disclosure Statement shall not be construed to mean that a search has been made or that no other material information as defined in 37 CFR § 1.56(a) exists. It is submitted that the Information Disclosure Statement is in compliance with 37 CFR § 1.98 and MPEP § 609 and the Examiner is respectfully requested to consider the listed references.

Respectfully submitted,

STALLMAN & POLLOCK LLP

Dated: September 2, 2003

By: 
Michael A. Stallman
Reg. No. 29,444

Attorneys for Applicant(s)

INFORMATION DISCLOSURE CITATION <i>(Use several sheets if necessary)</i>	Docket Number (Optional) TWI-5440	Application Number NEW
	Applicant(s) David E. Aspnes et al.	
	Filing Date HEREWITH	Group Art Unit Unknown

U.S. PATENT DOCUMENTS

*EXAMINER INITIAL	REF	DOCUMENT NUMBER	DATE	NAME	CLASS	SUBCLASS	FILING DATE
	*AA	3,985,447	10/12/1976	Aspnes	356	118	08/29/1975
	*AB	4,053,232	10/11/1977	Dill et al.	250	225	04/28/1975
	*AC	4,176,951	12/04/1979	Robert et al.	356	33	09/20/1977
	*AD	4,179,217	12/18/1979	Robert et al.	356	33	02/14/1978
	*AE	4,492,466	01/08/1985	Aspnes	356	334	06/28/1982
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	*AG	4,931,132	06/05/1990	Aspnes et al.	156	601	10/07/1988
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FOREIGN PATENT DOCUMENTS

	REF	DOCUMENT NUMBER	DATE	COUNTRY	CLASS	SUBCLASS	TRANSLATION	
							YES	NO

OTHER DOCUMENTS

(Including Author, Title, Date, Pertinent Pages, Etc.)

	*BC	A. Ambirajan et al., "Optimum Angles for a Polarimeter: Part I," <i>Optical Engineering</i> , Vol. 34, No. 6, pp. 1651-1655, June 1995.
	*BD	A. Ambirajan et al., "Optimum Angles for a Polarimeter: Part II," <i>Optical Engineering</i> , Vol. 34, No. 6, pp. 1656-1658, June 1995.
	*BE	I. An et al., "Simultaneous Real Time Spectroscopic Ellipsometry and Reflectance for Monitoring Semiconductor and Thin Film Preparation," <i>Materials Research Society Symposium Proc.</i> , Vol. 324, pp. 33-38, 1994.
	*BF	I. Appenzellerb, "A New Polarimeter for Paint Astronomical Objects," <i>Yerkes Observatory</i> , Univ. of Chicago, pp. 136-139, January 1967.

Examiner	Date Considered
Examiner: Initial if citation considered, whether or not citation is in conformance with MPEP Section 609; Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.	

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							YES	NO

OTHER DOCUMENTS

(Including Author, Title, Date, Pertinent Pages, Etc.)

	*BG	D.E. Aspnes, "Alignment of an Optically Active Biplate Compensator," <i>Applied Optics</i> , Vol. 10, pp. 2545-2546, November 1971.
	*BH	D.E. Aspnes et al., "High Precision Scanning Ellipsometer," <i>Applied Optics</i> , Vol. 14, pp. 220-228, January 1975.
	*BI	D.E. Aspnes et al., "Photomultiplier Linearization and System Stabilization for Photometric Ellipsometers and Polarimeters," <i>SPIE</i> , Vol. 112-Optical Polarimetry, pp. 62-66, 1977.
	*BJ	D.K. Burge et al., "Effect of a Thin Surface Film on the Ellipsometric Determination of Optical Constants," <i>Journal of the Optical Society of America</i> , Vol. 54, No. 12, pp. 1428-1433, December 1964.
	*BK	B.D. Cahan, "Implications of Three Parameter Solutions to the Three-Layer Model," <i>Surface Science</i> , Vol. 56, pp. 354-372, 1976.
	*BL	D. Clarke et al., " <i>Polarized Light and Optical Measurement</i> ," Chapter 4 and bibliography, Pergamon Press Ltd., Oxford, pp. 118-154 and 179-182, 1971.
	*BM	D. Clarke et al., "A Three-Channel Astronomical Photoelectric Spectropolarimeter," <i>Journal of Scientific Instruments (Journal of Physics E)</i> , Series 2, Vol. 1, pp. 409-412, 1968.
	*BN	W. Duncan et al., "Insitu Spectral Ellipsometry for Real-Time Measurement and Control," <i>Applied Surface Science</i> , Vol. 63, pp. 9-16, 1993.
	*BO	T. Gehrels (ed.), "Planets, Stars and Nebulae Studied with Photopolarimetry," University of Arizona Press, pp. 135-175, 1974.
	*BP	A. Hamnett et al., "A Ellipsometric Study of Polypyrrole Films on Platinum," <i>J. Electroanal Chem.</i> , Vol. 270, pp. 479-488, 1989.
	*BQ	P.S. Hauge, "Generalized Rotating-Compensator Ellipsometry," <i>Surface Science</i> , Vol. 56, pp. 148-160, 1976.
	*BR	P.S. Hauge, "Recent Developments in Instrumentation in Ellipsometry," <i>Surface Science</i> , Vol. 96, pp. 108-140, 1980.
	*BS	P.S. Hauge, "A Rotating-Compensator Fourier Ellipsometer," <i>Engineering Technology</i> , 5 pages in length, March 1975.
	*BT	E.B. Hodgdon, "Theory, Design, and Calibration of a UV Spectrophotopolarimeter," <i>Applied Optics</i> , Vol. 4, No. 11, pp. 1479-1483, November 1965.
	*BU	Y.T. Kim et al., "Fast Scanning Spectroelectrochemical Ellipsometry: In-Situ Characterization of Gold Oxide," <i>Surface Science</i> , Vol. 233, pp. 341-350, 1990.
	*BV	H.V. Nguyen et al., "Evolution of the Optical Functions of Thin-Film Aluminum: A Real-Time Spectroscopic Ellipsometry Study," <i>American Physical Society, Physical Review B</i> , Vol. 47, No. 7, pp. 3947-3965, February 1993.
	*BW	W. Paik et al., "Exact Ellipsometric Measurement of Thickness and Optical Properties of a Thin Light-Absorbing Film Without Auxiliary Measurements," <i>Surface Science</i> , Vol. 28, pp. 61-68, 1971.
	*BX	Z. Sekera, "Recent Developments in the Study of the Polarization of Sky Light," <i>Advances in Geophysics</i> , Vol. 3, pp. 43-104, 1956.
	*BY	D.E. Aspnes et al., "Rotating-Compensator/Analyzer Fixed-Analyzer Ellipsometer: Analysis and Comparison to Other Automatic Ellipsometers," <i>J. Opt. Soc. Am.</i> , Vol. 66, No. 9, Sept. 1976, pp. 949-954.
	*BZ	J.H.W.G. Den Boer et al., "Spectroscopic Rotating Compensator Ellipsometry in the Infrared: Retarder Design and Measurement," <i>Meas. Sci. Technol.</i> , Vol. 8, January 20, 1997, pp. 484-492.

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